(iii) Location of all safety critical systems, including any flight termination hardware, tracking aids, or telemetry systems;

(iv) Location of all major launch vehicle control systems, propulsion systems, pressure vessels, and any other hardware that contains potential hazardous energy or hazardous material; and

(v) For an unguided suborbital launch vehicle, the location of the rocket's center of pressure in relation to its center of gravity for the entire flight profile.

(c) *Payload description.* An applicant must include or reference documentation previously filed with the FAA that contains the payload information required by §415.59 for any payload or class of payload.

(d) *Trajectory.* An applicant must provide two drawings depicting trajectory information. An applicant must file additional trajectory information as part of the flight safety analysis data required by §415.115.

(1) One drawing must depict the proposed nominal flight profile with downrange depicted on the abscissa and altitude depicted on the ordinate axis. The nominal flight profile must be labeled to show each planned staging event and its time after liftoff from launch through orbital insertion or final impact; and

(2) The second drawing must depict instantaneous impact point ground traces for each of the nominal trajectory, the three-sigma left lateral trajectory and the three-sigma right lateral trajectory determined under §417.207 of this chapter. The trajectories must be depicted on a latitude/longitude grid, and the grid must include the outlines of any continents and islands.

(e) *Staging events.* An applicant must provide a table of nominal and ± three-sigma times for each major staging event and must describe each event, including the predicted impact point and dispersion of each spent stage.

(f) *Vehicle performance graphs.* An applicant must provide graphs of the nominal and ± three-sigma values as a function of time after liftoff for the following launch vehicle performance parameters: thrust, altitude, velocity, instantaneous impact point arc-range measured from the launch point, and present position arc-range measured from the launch point.

§415.111 Launch operator organization.

An applicant's safety review document must contain organizational charts and a description that shows that the launch operator's organization satisfies the requirements of §417.103 of this chapter. An applicant's safety review document must also identify all persons with whom the applicant has contracted to provide safety-related goods or services for the launch of the launch vehicle.

§415.113 Launch personnel certification program.

(a) A safety review document must describe how the applicant will satisfy the personnel certification program requirements of §417.105 of this chapter and identify by position those individuals who implement the program.

(b) An applicant's safety review document must contain a copy of its documentation that demonstrates how the launch operator implements the personnel certification program.

(c) An applicant's safety review document must contain a table listing each hazardous operation or safety critical task that certified personnel must perform. For each task, the table must identify by position the individual who reviews personnel qualifications and certifies personnel for performing the task.

§415.115 Flight safety.

(a) *Flight safety analysis.* An applicant's safety review document must describe each analysis method employed to meet the flight safety analysis requirements of part 417, subpart C, of this chapter. An applicant's safety review document must demonstrate how each analysis method satisfies the flight safety analysis requirements of part 417, subpart C, of this chapter. An applicant's safety review document must contain analysis products and other data that demonstrate the applicant's ability to meet the public risk criteria of §417.107 of this chapter and